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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,598	12/30/2003	Hong Liu	939-011645-US (PAR)	8666

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FAIRFIELD, CT 06824

EXAMINER	
PHU, PHUONG M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/748,598	LIU, HONG	
	Examiner	Art Unit	
	Phuong Phu	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/23/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because in figures 2, 3 and 5, blocks should be labeled with corresponding functional names; e.g., in figure 2, block "22" is suggested to be labeled with --RF Subsystem--, block "23" with --Baseband DSP--, etc., in order to help viewers to understand the diagrams shown in the figures. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 9-12, 16-20, 24-27, 31 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Carsello et al (7,203,254).

-Regarding to claim 1, see figures 3-5, col. 5, line 8 to col. 6, line 35, Carsello et al discloses a mobile station (see figure 3) for a communications network in which data is transmitted in bursts (312) (see figure 5) including training sequences (310), the station (see figure 3) comprising:

an rf front end (2) including a mixer (14) (see col. 5, lines 8-14);

a frequency synthesizer (28, 15) for generating for generating a local oscillator signal for said mixer, the frequency synthesizer including an electronically tunable reference oscillator (15) (see col. 5, lines 8-28);

a burst training sequence identifying means (comprising (220)) for generating a training sequence identifying signal (see col. 5, lines 30-67); and

frequency correction signal generating means (comprising (260)) for generating a control signal for tuning said reference oscillator in dependence on said training sequence identifying signal so as to correct an error in the frequency of said reference oscillator (see col. 5, lines 30-67).

-Regarding to claim 2, Carsello et al discloses that the burst training sequence identifying means comprises correlator means (220) for determining a correlation value (c(n)) (see Equation 1) for part of a burst (r(n)) and each of a plurality of training sequences (s(n)) and

identifying the burst training sequence according to the largest correlation value (see col. 5, line 30 to col. 6, line 35).

-Regarding to claim 3, Carsello et al discloses that the correlator means is configured, for each of said training sequences (s(n)), to repeatedly cross-correlate a part of the training sequence part of a burst (r(n)) with a training sequence (s(m)), moving said part of the training sequence part of a burst relative to said train sequence between cross-correlations (see col. 6, line 3 to col. 9, line 48).

-Regarding to claim 4, Carsello et al teaches that the correlator means is configured, for each of said training sequences, to repeatedly cross-correlate a part of a burst having SYNC SEARCH WINDOW (314) (see figure 5), greater than the training sequence part (310) of the burst, with a training sequence (s(m)), moving training sequences relative to said part of a burst between cross-correlations (see col. 6, lines 3-35).

-Regarding to claim 5, Carsello et al discloses control means (inherently included in (15)) for tuning the mobile station to a VCO frequency, (considered here equivalent with the limitation "control channel frequency"), to receive control channel bursts (r(n)) and the burst training sequence identifying means (comprising (220)) is configured to identify the training sequences of the bursts of said VCO frequency channel, (considered here equivalent with the limitation "control channel"), (see figure 3).

-Regarding to claim 9, as similarly applied to claims 1-5 set forth above and herein incorporated, Carsello et al discloses a mobile station (see figure 3) for a communications network in which data is transmitted in bursts including training sequences, the station comprising:

an rf front end(2) including a mixer (14);

a frequency synthesizer (15, 28) for generating for generating a local oscillator signal for said mixer, the frequency synthesizer including an electronically tunable reference oscillator (15);

a burst training sequence identifying means (comprising 220) for generating a training sequence identifying signal; and

frequency correction signal generating means (comprising (260)) for generating a control signal for tuning said reference oscillator in dependence on said training sequence identifying signal so as to correct an error in the frequency of said reference oscillator, wherein the burst training sequence identifying means comprises correlator means (220) for determining a correlation value for part of a burst and each of a plurality of training sequences and identifying the burst training sequence according to the largest correlation value.

-Claim 10 is rejected with similar reasons set forth for claim 3.

-Claim 11 is rejected with similar reasons set forth for claim 4.

-Regarding to claim 12, as similarly applied to claims 1-5 set forth above and herein incorporated, Carsello et al discloses a mobile station (see figure 3) for a communications network in which data is transmitted in bursts including training sequences, the station (see figure 3) comprising:

an rf front end (2) including a mixer (14);

a frequency synthesizer (28, 15) for generating for generating a local oscillator signal for said mixer, the frequency synthesizer including an electronically tunable reference oscillator (15);

control means (inherently include in (15)) for tuning the mobile station to a VCO frequency, (considered here equivalent with the limitation "control channel frequency"), to receive control channel bursts (r(n));

a burst training sequence identifying means (comprising (220)) for generating a training sequence identifying signal; and

frequency correction signal generating means (comprising (260)) for generating a control signal for tuning said reference oscillator in dependence on said training sequence identifying signal so as to correct an error in the frequency of said reference oscillator, wherein the burst training sequence identifying means is configured to identify the training sequences of the bursts of said VCO frequency channel, (considered here equivalent with the limitation "control channel").

-Regarding to claim 16, as similarly applied to claims 1-5 set forth above and herein incorporated, Carsello et al discloses a method of performing frequency correction in a mobile station for a communications network in which data is transmitted in bursts including training sequences, the method (see figure 3) comprising:

procedure (2) of receiving a burst;

procedure (comprising (220)) of identifying the training sequence in the burst;

procedure (comprising (260)) of generating a tuning control signal in dependence on said training sequence identifying signal; and

procedure (28, 15) of applying the tuning control signal to a tunable reference oscillator (15) in a frequency synthesizer (15, 28) that provides a local oscillator signal to a front end mixer (14).

-Claim 17 is rejected with similar reasons set forth for claim 2.

-Claim 18 is rejected with similar reasons set forth for claim 3.

-Claim 19 is rejected with similar reasons set forth for claim 4.

-Claim 20 is rejected with similar reasons set forth for claim 5.

-Regarding to claim 24, as similarly applied to claims 1-5 set forth above and herein incorporated, Carsello et al discloses a method of performing frequency correction in a mobile station for a communications network in which data is transmitted in bursts including training sequences, the method (see figure 3) comprising:

procedure (2) of receiving a burst;

procedure (comprising (220)) of identifying the training sequence in the burst;

procedure (comprising (260)) of generating a tuning control signal in dependence on said training sequence identifying signal; and

procedure (28, 15) of applying the tuning control signal to a tunable reference oscillator (15) in a frequency synthesizer (28, 15) that provides a local oscillator signal to a front end mixer (14), wherein identifying the burst training sequence comprises cross-correlating a part of a burst and a plurality of training sequences.

-Claim 25 is rejected with similar reasons set forth for claim 3.

-Claim 26 is rejected with similar reasons set forth for claim 4.

-Claim 27 is rejected with similar reasons set forth for claim 5.

-Regarding to claim 31, as similarly applied to claims 1-5 set forth above and herein incorporated, Carsello et al discloses a method of performing frequency correction in a mobile

station for a communications network in which data is transmitted in bursts including training sequences, the method (see figure 3) comprising:

procedure (2) of receiving a burst;

procedure (comprising (220)) of identifying the training sequence in the burst;

procedure (comprising (260)) of generating a tuning control signal in dependence on said training sequence identifying signal; and

procedure (28, 15) of applying the tuning control signal to a tunable reference oscillator (15) in a frequency synthesizer (28, 15) that provides a local oscillator signal to a front end mixer (14).

-Claim 32 is rejected with similar reasons set forth for claim 5.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6-8, 13-15, 21-23 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carsello et al in view of Fulghum (6,728,326).

-Regarding to claims 6 and 13, as applied to claim 1, Carsello et al teaches the claimed mobile station, except he does not teach that the burst training sequence identifying means is configured to identify the training sequences of the bursts in a plurality of slots of a TDMA frame, as claimed.

However, Carsello et al teaches that the burst training sequence identifying means is configured to identify the training sequences of the bursts in a plurality of slots "data slots" of a carrier frequency "expected frequency" (see col. 1, lines 46-58). Carsello et al does not teach whether the plurality of slots are included in a TDMA frame.

Fulghum teaches using a TDMA scheme in a wireless communication system in order to improve the spectral efficiency of the system in such a way that each carrier frequency is divided into repeated frames, the frames subdivided into a plurality of time slots wherein a mobile station might be assigned one or more slots on separate transmit and receive frequencies (see col. 1, lines 10-35).

It would have been obvious for one skilled in the art to implement Carsello et al with a TDMA scheme, as taught by Fulghum, in such a way that the carrier frequency "expected frequency" would be divided into repeated frames, the frames subdivided into a plurality of time slots wherein the mobile station would assigned on plurality of slots "data slots" included in a TDMA frame, so that with such the implementation, the spectral efficiency of the communication network would be improved.

With such the implementation, Carsello et al in view of Fulghum teaches that the burst training sequence identifying means is configured to identify the training sequences of the bursts in a plurality of slots of a TDMA frame, as claimed.

-Regarding to claims 7, 14, Carsello et al teaches that said slots are contiguous (see col. 1, lines 51-58).

-Regarding to claims 8, 15, as applied to claim 6, Carsello et al in view of Fulghum teaches that said slot are configurable to be all included in a TDMA frame.

-Regarding to claims 21, 28, as similarly applied to claim 6, Carsello et al does not teach that the training sequences used in said cross-correlating are the training sequences of the bursts in a plurality of slots of a TDMA frame, as claimed.

However, Carsello et al teaches that the training sequences used in said cross-correlating are the training sequences of the bursts in a plurality of slots "data slots" of a carrier frequency "expected frequency" (see col. 1, lines 46-58). Carsello et al does not teach whether the plurality of slots are included in a TDMA frame.

Fulghum teaches using a TDMA scheme in a wireless communication system in order to improve the spectral efficiency of the system in such a way that each carrier frequency is divided into repeated frames, the frames subdivided into a plurality of time slots wherein a mobile station might be assigned one or more slots on separate transmit and receive frequencies (see col. 1, lines 10-35).

It would have been obvious for one skilled in the art to implement Carsello et al with a TDMA scheme, as taught by Fulghum, in such a way that the carrier frequency "expected frequency" would be divided into repeated frames, the frames subdivided into a plurality of time slots wherein the mobile station would assigned on the plurality of slots "data slots" included in a TDMA frame, so that with such the implementation, the spectral efficiency of the communication network would be improved.

With such the implementation, Carsello et al in view of Fulghum teaches that the training sequences used in said cross-correlating are the training sequences of the bursts in a plurality of slots of a TDMA frame, as claimed.

-Claims 22, 29 are rejected with similar reasons set forth for claim 7.

-Claims 23, 30 are rejected with similar reasons set forth for claim 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (8:00 AM - 4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phuong Phu
Primary Examiner
Art Unit 2611

Phuong Phu PHUONG PHU
PRIMARY EXAMINER

Phuong Phu
06/04/07